We claim:

1. A catalytic reactor for treating a gas-liquid feed stream with structured monolithic catalysts of honeycomb configuration comprising:

a reactor vessel for the containment of a catalyst bed for processing a chemical feed stream;

a catalyst bed comprising two or more sections of structured honeycomb catalyst disposed within the reactor vessel, the catalyst bed including at least a first catalyst section and a second catalyst section disposed in flow-connected end-to-end relationship with the first catalyst section;

each of the first and second catalyst sections having an inlet end, an outlet end, and a plurality of parallel open-ended honeycomb channels bounded by channel walls with catalytically active wall surfaces extending between the inlet and outlet ends, the channels of both sections being oriented along a common flow axis of feed stream flow through the catalyst bed;

the channels in the second catalyst section being offset from the channels in the first catalyst section such that at least a majority of the channels in the first catalyst section have outlet ends opening onto at least one channel wall segment and at least two adjoining channel openings at the inlet end of the second catalyst section.

2. A catalytic reactor in accordance with claim 1 wherein the first catalyst section comprises channels of substantially the same channel size and channel cross-

sectional shape as the channels of the second catalyst section.

3. A catalytic reactor in accordance with claim 1 wherein the first catalyst section comprises channels differing from the channels of the second catalyst section in channel size, channel cross-sectional shape, or both.

4. A catalytic reactor in accordance with claim 1 wherein the channels in the second catalyst section are rotationally offset from the channels in the first catalyst section.

5. A catalytic reactor in accordance with claim 1 wherein the channels in the second catalyst section are laterally offset from the channels in the first catalyst section.

6. A catalytic reactor in accordance with claim 1 wherein a channeled separator is positioned between two honeycomb catalyst sections.

7. A method for treating a gas-liquid feed stream with structured monolithic catalysts of honeycomb configuration comprising the steps of:

introducing the feed stream into a reactor vessel, the vessel containing at least first and second sections of structured honeycomb catalyst, each section comprising a plurality of parallel, open-ended honeycomb channels bounded by catalyst-containing channel walls extending from an inlet end to an outlet end thereof, the channels of both sections lying parallel to a common flow axis through the reactor and the catalyst sections being

arranged in flow-connecting, end-to-end relationship with each other;

directing the feed stream past the inlet end and through the plurality of honeycomb channels of the first section of catalyst as a plurality of feed stream portions,

reacting the plurality of feed stream portions against the catalyst-containing channel walls of the first section of catalyst and discharging thus-reacted feed stream portions from the outlet end thereof;

subdividing at least a majority of the feed stream portions into subdivided feed stream portions and, for each feed stream portion, directing the subdivided feed stream portions therefrom into a set of at least two parallel adjoining channels in the second catalyst section;

reacting the subdivided feed stream portions against the catalyst-containing walls of the second catalyst section; and

discharging the thus-reacted subdivided feed stream portions from the second catalyst section.

8. A method in accordance with claim 7 wherein the feed stream portions are subdivided by the channel walls of the second catalyst section into from 2 to 4 subdivided feed stream portions at the inlet face of the second catalyst section.

9. A method in accordance with claim 7 wherein the feed stream is passed through the reactor in a co-current downflow mode.